

<b>Subject:</b>	Safety Data Sheet – Nickel Metal Hydride				
<b>Document No:</b>	GYSUK 028	<b>Revision:</b>	A	<b>Date:</b>	25 <sup>th</sup> June 2019

**SECTION I – SUPPLIERS INFORMATION**

GS Yuasa Battery Sales UK Ltd.  
 Unit 13, Hunts Rise,  
 South Marston Park,  
 Swindon.  
 Wiltshire.  
 SN3 4TG  
 Telephone number for information 01793 833555

**SECTION II – HAZARDOUS INGREDIENTS**

**IMPORTANT NOTE:**

The battery should not be opened or burned. Exposure to the ingredients within or their combustion products could be harmful.

A) The content of elements are based on homogeneous materials level of NiMH battery:

Element	Lead	Cadmium	Hexavalent Chromium (Cr6+)	Mercury	Polybrominated Biphenyls (PBBs)	Polybrominated Diphenyls Ethers(PBDEs)
% W. t.	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1

B) The content of elements is based on total weight of NiMH battery:

INGREDIENTS INFORMATION				
Ingredients name	CAS No.	Classification under DSD	Classification under CLP	% W.t.
Nickel hydroxide	12054-48-7	Carc. Cat. 1; R49 Repr. Cat. 2; R61 Muta. Cat 3; R68 T; R48/23 Xn; R20/22 Xi; R38 R42/43 N; R50-53	Carc. 1A; H350i Repr. 1B; H360D Muta. 2 H341 STOT Re 1; H372 Acute Tox. 4; H332 Acute Tox. 4 H302 Skin Irrit. 2; H315 Resp. Sens. 1; H334 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	22.7
Cobalt oxide	1307-96-6	Xn; R22 R43 N; R50-53	Acute Tox. 4 H302 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	1.8

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INGREDIENTS INFORMATION				
Ingredients name	CAS No.	Classification under DSD	Classification under CLP	% W.t.
Nickel powder	7440-02-0	Carc. Cat. 3; R40 T; R48/23 R43 R52-53	Carc. 2; H351 STOT Re 1; H372 Skin Sens. 1; H317 Aquatic Chronic 3; H412	0.8
Hydrogen storage alloy	Not applicable	Not Classified	Not Classified	34.4
Potassium hydroxide	1310-58-3	XN; R22 C; R35	Acute Tox. 4; H302 Skin Corr. 1A; H314	4.4
Lithium hydroxide	1310-65-2	XN; R22 C; R34 R52/53	Acute Tox. 4; H302 Skin Corr. 1B; H314 Aquatic Chronic 3; H412	0.4
Nickel	7440-02-0	Carc. Cat. 3; R40 T; R48/23 R43 R52-53	Carc. 2; H351 STOT Re 1; H372 Skin Sens. 1; H317 Aquatic Chronic 3; H412	5.5
Polypropylene	9003-07-0	Not Classified	Not Classified	3.4
Iron	7439-89-6	Not Classified	Not Classified	26.6

**SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS**

Boiling Point:	NA	Specific Gravity (H <sub>2</sub> O=1):	NA
Vapour Pressure (mm Hg):	NA	Melting Point:	NA
Vapour Density (AIR=1):	NA	Evaporation Rate (Butyl Acetate):	NA
Solubility in Water:	NA	Appearance and Odour:	Cylindrical shape, odourless

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**SECTION IV - REACTIVITY DATA**

Stability	Unstable	Conditions to Avoid
	Stable X	
Hazardous Polymerization	May Occur	Conditions to Avoid
	Will Not Occur X	
Incompatibility (Materials to Avoid)		
Hazardous Decomposition or By products		

**SECTION V - FIRE AND EXPLOSION HAZARD DATA**

If fire or explosion occurs when batteries are on charge shut off power to charger.

In case of fire where nickel metal hydride batteries are present, apply a smothering agent such as METL-X, sand, dry ground dolomite, or soda ash, or flood the area with water. A smothering agent will extinguish burning nickel metal hydride batteries. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Virtually all fires involving nickel metal hydride batteries can be controlled with water. However, when water is used hydrogen gas may evolve. In a confined space hydrogen gas can form an explosive mixture. In this situation smothering agents are recommended.

Fire fighters should wear self-contained breathing apparatus. Burning nickel metal hydride batteries can produce toxic fumes including oxides of nickel, cobalt, aluminium, manganese, lanthanum, cerium, neodymium, and praseodymium.

**SECTION VI - HEALTH HAZARD DATA**

Under normal conditions the battery is hermetically sealed.

**Ingestion:**

Swallowing a battery can be harmful.

Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

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**Inhalation:**

Contents of an open battery can cause respiratory irritation. Hypersensitivity to nickel can cause allergic pulmonary asthma. Provide fresh air and seek medical attention.

**Skin Contact:**

Contents of an open battery can cause skin irritation and/or chemical burns. Nickel, nickel compounds, cobalt, and cobalt compounds can cause skin sensitization and an allergic contact dermatitis. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

**Eye Contact:**

Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

**SECTION VII- PRECAUTIONS FOR SAFE HANDLING AND USE****Storage:**

Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life.

**Mechanical Containment:**

Never seal or encapsulate nickel metal hydride batteries.

Do not obstruct safety release vents on batteries. Encapsulation (potting) of batteries will not allow cell venting and can cause high pressure rupture.

**Handling:**

Accidental short circuit for a few seconds will not seriously affect the battery. However, this battery is capable of delivering very high short circuit currents. Prolonged short circuits will cause high cell temperatures which can cause skin burns. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, and metal covered tables or metal belts used for assembly of batteries into devices.

Do not open battery. The negative electrode material may be pyrophoric. Should an individual cell from a battery become disassembled, spontaneous combustion of the negative electrode is possible. This is much more likely to happen if the electrode is removed from its metal container. There can be a delay between exposure to air and spontaneous combustion.

**Charging:**

This battery is made to be charged many times. Because it gradually loses its charge over a few months, it is good practice to charge battery before use. Use recommended charger. Improper charging can cause heat damage or even high pressure rupture. Observe proper charging polarity.

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## SECTION VIII-ACCIDENTAL RELEASE OR SPILLAGE

Steps to be taken in case material is released or spilled.

Batteries that are leaking should be handled with rubber gloves. Avoid direct contact with electrolyte. Wear protective clothing and a positive pressure Self-Contained Breathing Apparatus (SCBA).

## SECTION IX-SPECIAL PROTECTION INFORMATION

### Ventilation Requirements:

Not necessary under normal conditions.

### Respiratory Protection:

Not necessary under normal conditions.

### Eye Protection:

Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

### Gloves:

Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

### Open Battery Storage:

Battery should not be opened. Should a cell become disassembled, the electrode should be stored in a fireproof cabinet, away from combustibles.

Keep batteries between -20°C and 35°C for prolong storage.

When the cells are closed to fully charged, the storage temperature should be between -20°C and 30°C and should be controlled at 10-20°C during transportation and packed with efficient air ventilation.

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**SECTION X - EXPOSURE CONTROLS / PERSON PROTECTION**

Occupational Exposure Limits: LTEP	NA	STEP	NA
Respiratory Protection (Specify Type)	NA		
Ventilation	Local Exhausts	NA	Special
	Mechanical (General)	NA	Other
Protective Gloves	NA	Eye Protection	NA
Other Protective Clothing or Equipment	NA		
Work / Hygienic Practices	NA		

**SECTION XI - ECOLOGICAL INFORMATION**

Not applicable.

**SECTION XII - DISPOSAL METHOD**

Dispose of the batteries in accordance with local and government legislation.

**SECTION XIII – TRANSPORTATION INFORMATION**

a) Batteries must be packed in a safe and responsible manner for all forms of transportation (ground, air, or sea).

Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and contained in “strong outer packaging” that prevents spillage of contents. All original packaging for these batteries has been designed to be compliant with these regulatory concerns.

Nickel metal hydride batteries (sometimes referred to as “Dry cell” batteries) are not defined as dangerous goods under the IATA Dangerous Goods Regulations 60th edition 2019; ICAO Technical Instructions and the U.S hazardous materials regulations (49 CFR). These batteries are not subject to the dangerous goods regulations as they are compliant with the requirements contained in the following special provisions.

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Regulatory body	Special provisions
ADR	295-304, 598
IATA	A199
IMO	UN3496, SP117 & SP963
UN	UN3496
US DOT	49 CFR 172, 102 Provision 130

In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words “not restricted” and the Special Provision number A199 be provided on the air waybill, when an air waybill is issued.

b) International Maritime Organization (IMO) IMDD code regulated these products as UN3496 BATTERIES, NICKEL METAL HYDREIDE, class 9 dangerous goods with Special Provision 117 and 963 assigned.

SP117:

Only regulated when transported by sea.

SP963

Nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment are not subject to the provisions of this code.

All other Nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this code provided that they are loaded in a cargo transport unit in a total quantity of less than 100 kg gross mass. When loaded in a cargos transport unit in a total quantity of 100 Kg gross mass or more, they are subject to other provisions of this code except those of 5.4.1, 5.4.3 and column (16) of the dangerous good list in Chapter 3.2.

The requirements of these sections are:

- (1) Dangerous goods transport documentation to accompany the shipment.
- (2) The shipment must be described as “UN3496, BATTERIES, NICKEL-METAL HYDRIDE, CLASS 9” on the shipper’s declaration of dangerous goods.
- (3) The dangerous goods description must also be entered on the Dangerous Cargo Manifest and / or the detailed stowage plan in compliance with IMDG Code requirements of shipboard documentation.

## SECTION XIV – REGULATORY INFORMATION

Special requirement in accordance local regulatory requirements.

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**SECTION XV – OTHER INFORMATION**

The data in this Safety Data Sheet relates only to the specific material designated herein.

**SECTION XVI – MEASURES FOR FIRE EXTINCTION**

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture.

Fire fighters should wear self-contained breathing apparatus.

END

**YBSUK reference document:**

JJJ/JS-QW751-07 (MH 02 01 2019).